## REMARKS/ARGUMENTS

The claims are 1-21 and 23. Claims 1, 2, 7, 9-17 and 19-21 have been amended to improve their form. Claim 8 has been amended to add a period at the end thereof. Claim 22 has been canceled, new claim 23 dependent on claim 17 has been added, and claim 18 has been amended to depend on new claim 23. Reconsideration is expressly requested.

Claim 22 was rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter in the recitation of a "use." In response, Applicants have canceled claim 22 thereby obviating the Examiner's rejection under 35 U.S.C. 101.

Claims 2, 7-11, 13, 14, 16, 17 and 19-21 (and presumably claim 1) were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the reasons set forth on pages 2-3 of the Office Action. In response, Applicants have, *inter alia*, amended claims 1, 2, 7-11, 13, 14, 16, 17 and 19-21 to improve their form and have added new claim 23 dependent on claim 17, which it is

respectfully submitted overcomes the Examiner's rejection under 35 U.S.C. 112, second paragraph.

With respect to the Examiner's objection to the expression "Λ" in chemical names for the base component in claim 9 and in paragraph [0029] of the published patent application, Applicants respectfully traverse this objection. The term "Λ" used in paragraph [0029] of the published patent application and in claim 9 is a Greek capital letter "lambda" which is used according to IUPAC to describe a phosphazene. It is respectfully submitted that the designation of this compound is correct and that a person skilled in the art clearly understands what is meant in the use of that terminology. Attached hereto is an excerpt from the Aldrich catalogue referring to a similar phosphazene compound and using the "Λ" terminology.

It is respectfully submitted that all currently pending claims fully comply with 35 U.S.C. 112, second paragraph, and Applicants respectfully request that the rejection on this basis be withdrawn.

Claims 1, 2, 5, 6-18 and 21 were provisionally rejected on the grounds of non-statutory obviousness-type double patenting as being unpatentable over claims 1-20 of co-pending Application Serial No. 11/480,245. Essentially the Examiner's position was that claims 1, 2, 5, 6-18 and 21 are not patentably distinct from claims 1-20 of the '245 application because the recitation of "comprising" permits the presence of other components and because catalytic salts of the '245 application claims encompass the salts recited in the claims as evidenced by claim 14 and because the polyether, cations and anions of the '245 application claims encompass the polyether, cations and anions recited in the claims inherently. In response, Applicants are submitting herewith a Terminal Disclaimer, thereby obviating the double patenting rejection.

Claims 1, 2 and 7-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Yano et al. U.S. Patent No. 6,077,896* alone, or in view of *Schwabe et al. U.S. Patent No. 6,218,461*, alone, or further in view of *Bublewitz et al. U.S. Patent Application Publication No. 2002/0156186*, or *Bachon et al. U.S.*

*Patent Application Publication No. 2005/0260401*. Claims 1, 2 and 5-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Yano et al.*, *Schwabe et al.*, or further in view of *Renga U.S. Patent No. 4,375,549* and *Panster et al. U.S. Patent No. 4,362,885*. Claims 1, 2, 5, 6, 10-14 and 16-22 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Müller et al. U.S. Patent No. 5,118,290* in view of *Renga, Panster et al.* and *Schwabe et al.* Claims 1-6, 10-14 and 16-22 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Müller et al.* in view of *Renga, Panster et al.* and *Schwabe et al.* and further in view of *Bublewitz et al. '186*.

This rejection is respectfully traversed.

As set forth in claim 1 as amended, Applicants' invention provides a condensation-crosslinking dental material containing at least one alkoxysilyl-functional polyether and at least one catalyst. The at least one catalyst is a salt that is formed from at least one cation selected from the items specified in claim 1 as amended, and combinations thereof, and at least one

anion of a saturated and/or unsaturated (cyclo)aliphatic carboxylic acid specified in claim 1 as amended. Surprisingly, Applicants have found that the salt catalysts to be used, have good catalytic activity for condensation reactions and are outstandingly suitable for use as catalysts in condensation-crosslinking dental materials based on alkoxysilyl-functional polyethers.

*Yano et al.* discloses curable compositions including an oxyalkylene polymer with at least one reactive silyl group and a compound having an intramolecular α, β-diol or an α, γ-diol structure. See *Yano et al.* claim 1. Component a) of *Yano et al.* can be a condensation crosslinking alkoxysilyl-functional polyether (formula (2) at column 2, line 26). *Yano et al.* also contains a list of curing agents at column 5, line 46 to column 6, line 7. Within this list, one candidate mentioned is DBU (see column 6, lines 1 to 2 of *Yano et al.*). Furthermore, it is stated in this list that salts of amine compounds with carboxylic or other acids can be used. See column 6, lines 2 to 3 of *Yano et al.*

Although it is correct that the intended use in a composition claim may have no probative value, it is respectfully submitted that the reference to a dental material in Applicants' claim 1 as amended indicates that the curing of the material must take place under ambient temperatures only and not at elevated temperatures far above the temperature of a patient's body.

*Yano et al.*, however, recites at column 7, lines 3 to 6, uses as elastic sealants in the fields of building and construction works and in industrial applications. Reference to these uses and the examples given for application of the compositions of *Yano et al.* demonstrate that these are materials which cure by the presence of the humidity present in the ambient air, which generally takes days if no increased temperatures are used for curing these compositions. Thus, the compositions of *Yano et al.* do not cure under the conditions in a patient's mouth and therefore are unsuitable for dental purposes.

For a curable dental material two characteristics are essential. The curable material must be storage stable over extended periods prior to use and the curable material must crosslink within a short time (during minutes or tens of minutes) and at fairly low temperatures when applied to a patient's mouth. See Applicants' disclosure in the published patent application paragraphs [0007] and [0039].

Applicants' invention as set forth in claim 1 as amended is based on the discovery that selected salts when used as condensation crosslinking catalysts result in the above-identified profile of a condensation crosslinking material.

In the Examples set forth in Applicants' disclosure, it is shown that a proper selection of the catalyst has to be made to result in a composition as recited in Applicants' claim 1 as amended. Thus, not every salt derived from a cation using a protonated DBU is suitable as is demonstrated with Examples 16 to 40 and with Comparative Examples 8 to 19 in Applicants' disclosure, each using a catalyst salt including protonated DBU

and an anion derived from an acid used for protonation of DBU. Thus, although each of the catalysts used in these Examples and Comparative Examples is derived from DBU, for a proper performance under "dental" conditions the acid portion used for salt formation needs to be selected properly. Only with the acids specified in the "Examples" portion are tolerable setting times obtained while with other acids specified in the "Comparative Examples" the setting times are not acceptable or the compositions do not cure under "dental" conditions. See paragraphs [0138] and [0142] of Applicants' published patent application. Among the different acids used in the "Comparative Examples" are "strong acids," such as toluene sulfonic acid, sulfuric acid or phosphoric acid, and also "weak acids," such as benzoic acid, acetic acid or acrylic acid. Thus, the nature of the weak acid used in the salt of Applicants' condensation crosslinking dental material as recited in claim 1 as amended plays an important role in the function of the claimed composition, which it is respectfully submitted is not evident from *Yano et al.* which states that all combinations of amine compounds with any carboxylic acid or other acid can be used.

Therefore, it is respectfully submitted that *Yano et al.* equates the performance of all catalyst salts which is not true as demonstrated by Applicants' disclosure. Therefore, it is respectfully submitted that Applicants' condensation crosslinking dental material as recited in claim 1 as amended is patentable over *Yano et al.* as the unexpected properties of the claimed compositions and the specific selection of the catalyst component would not have been obvious to one of ordinary skill in the art from *Yano et al.*

Regarding the secondary reference to *Schwabe et al.*, this reference discloses at column 1, line 64, a tin(II)octanoate as a known condensation catalyst (when discussing the prior art of *Schwabe et al.*). This compound is far removed from the salts used in Applicants' condensation crosslinking dental material as recited in claim 1 as amended. Tin(II)octanoate is a metal organic compound which is not within the definition of the catalyst salt of Applicants' claims (in a preferred embodiment the presence of all metal containing catalysts is strictly prohibited). See paragraph [0036] of Applicants' published

patent application. Furthermore, the use of tin(II)octanoate as a catalyst is already disclosed in Applicants' disclosure in paragraph [0006] of the published patent application. The sole reference in *Schwabe et al.* to salts in the passage in column 1 is found at column 1, lines 65 to 67, disclosing butyl ammonium acetate as an amine salt. This compound is outside the scope of the catalyst definition of Applicants' claims. Therefore, it is respectfully submitted that the lack of information in *Yano et al.* relating to the selection of a proper catalyst can not be remedied by reference to the disclosure of *Schwabe et al.*

With respect to the combinations of *Yano et al.* and *Schwabe et al.*, and the secondary references to either *Bublewitz et al. '186* or *Bachon et al.*, it is respectfully submitted that neither *Bublewitz et al. '186* nor *Bachon et al.* contains any reference to the catalysts used in Applicants' condensation crosslinking dental material as recited in claim 1 as amended. Therefore, it is respectfully submitted that Applicants' condensation crosslinking dental material as recited in claim 1 as amended cannot be rendered obvious from a combination of *Yano et al.* and

either *Bublewitz et al. '186* or *Bachon et al.* or from the combination of *Yano et al.*, *Schwabe et al.*, and either *Bublewitz et al. '186* or *Bachon et al.*

With respect to the Examiner's rejection based on the combination of *Yano et al.* with *Schwabe et al.*, *Renga* and *Panster et al.*, it is respectfully submitted that the defects and deficiencies of *Yano et al.* and *Schwabe et al.* as discussed above are nowhere remedied by either of these two references. *Renga* teaches various catalysts including salts of organic acids and ammonium cations or phosphonic cations. See *Renga* at column 3, lines 8 to 57. *Renga* teaches that as catalysts, acids, bases and salts can be used. See *Renga* at column 3, lines 8 to 9. Examples for acids are all types of acids, including mineral acids, organic acids or Lewis acids. See *Renga* at column 3, lines 9 to 12. Examples for bases are all types of bases including organic and inorganic bases (see column 3, lines 12 to 14 of *Renga*). Examples of salts are all types including metal salts and quaternary salts (see column 3, lines 14 to 17 of *Renga*). Examples for quaternary salts are found at column 3,

lines 39 to 57 of *Renga*. Therein ammonium salts and phosphonium salts are disclosed with any possible anion (see the definition for Y). Therefore, it is respectfully submitted that the specific combination of selected ammonium cations with anions derived from selected carboxylic acids is nowhere disclosed or suggested in *Renga*. At column 4, lines 2 to 12 of *Renga* it is stated that the initiator compound may be solubilized by adding a solubilizing agent, such as a crown ether. More detailed information is not given in *Renga*. Thus, it is respectfully submitted that *Renga* fails to disclose or suggest the specific salts of Applicants' claim 1 as amended, which are formed from complexes of alkali metal or ammonium cations with crown ethers and/or cryptands combined with anions derived from selected weak organic acids.

In *Panster et al.*, a process for the manufacture of (iodoorganyl)alkoxysilanes is disclosed. See title of *Panster et al.* Therein a selected chlorine or bromine silane compound is reacted with a selected iodide in the presence of a quaternary component or of a crown ether in an organic liquid. See *Panster*

*et al.* claim 1. *Panster et al.* fails to disclose or suggest condensation crosslinking of an alkoxysilyl-functional polyether compound. Accordingly, it is respectfully submitted that *Panster et al.* has no relevance for the assessment of the patentability of Applicants' condensation crosslinking dental material as recited in claim 1 as amended. Accordingly, it is respectfully submitted that Applicants' condensation crosslinking dental material as recited in claim 1 as amended cannot be rendered obvious from the combination of *Yano et al.*, *Schwabe et al.*, *Renga* and *Panster et al.*

With respect to the Examiner's rejection based on *Müller et al.* with *Renga*, *Panster et al.*, and *Schwabe et al.*, it is respectfully submitted that *Müller et al.* fails to disclose or suggest the catalysts used in Applicants' condensation crosslinking dental material as set forth in claim 1 as amended. Although the Examiner refers to *Renga*, *Panster et al.* and *Schwabe et al.* in order to demonstrate that the catalysts used in the compositions of Applicants' claims were known, it is respectfully submitted that these references do not disclose the selected

catalysts that must be used in the claimed compositions in order to result in the profile needed for a dental material (for example storage stability and rapid curing at ambient temperature). Thus, it is respectfully submitted that Applicants' claims cannot be considered obvious over the combination of *Müller et al.* with *Renga, Panster et al.*, and *Schwabe et al.*

With respect to the Examiner's rejection based on *Müller et al.* combined with *Renga, Panster et al., Schwabe et al.*, and *Bublewitz et al. '186*, the Examiner relies on *Renga, Panster et al., Schwabe et al.*, and *Bublewitz et al. '186* to demonstrate that the presence of fillers was known from these references. Although fillers may have been known, it is respectfully submitted that there is no guidance in *Müller et al.* or in the secondary references to use a selected catalysts as required by Applicants' claims. Accordingly, it is respectfully submitted that Applicants' condensation crosslinking dental material as recited in claim 1 as amended is patentable over the combination

of *Müller et al.* with *Renga*, *Panster et al.*, *Schwabe et al.*, and *Bublewitz et al. '186*.

In summary, claims 1, 2 and 7-21 have been amended, claim 22 has been canceled, and new claim 23 has been added. In addition, a Terminal Disclaimer and a check in the amount of $70.00 in payment of the Terminal Disclaimer fee are enclosed. In view of the foregoing, it is respectfully requested that the claims be allowed and that this application be passed to issue.

Applicants also submit herewith a Supplemental Information Disclosure Statement.

Respectfully submitted,
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Enclosures:
Excerpt from the Aldrich catalogue (pages 1-2)
Terminal Disclaimer with check in the amount of $70.00
Supplemental Information Disclosure Statement
Form PTO-1449 with twenty-nine (29) documents
Check in the amount of $180.00

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Amy Klein

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